FUTURE FISHERIES IMPROVEMENT PROGRAM
GRANT APPLICATION
(please fill in the highlighted areas)

I. APPLICANT INFORMATION

A. Applicant Name: Jim Olsen

B. Mailing Address: 1820 Meadowlark Lane

C. City: Butte State: MT Zip: 59701

Telephone: 406-533-8451 E-mail: jimolsen@mt.gov

D. Contact Person: Jim Olsen

Address if different from Applicant:

City: State: Zip:

Telephone: E-mail:

E. Landowner and/or Lessee Name (if other than Applicant): US Forest Service, Beaverhead Deerlodge National Forest

Mailing Address: 420 Barrett St

City: Dillon State: MT Zip: 59725

Telephone: 406-683-3900 E-mail:

II. PROJECT INFORMATION*

A. Project Name: Van Houten Fish Barrier and Spawning Channel

River, stream, or lake: Van Houten Lake and unnamed outlet stream

Location: Township: 7S Range: 15W Section: 7,8
Latitude: 45.245501 Longitude: 113.476032 *within project (decimal degrees)*

County: Beaverhead

B. Purpose of Project:

Construct a fish barrier on the outlet of Van Houten Lake and restore native westslope cutthroat trout and Arctic grayling.

C. Brief Project Description:

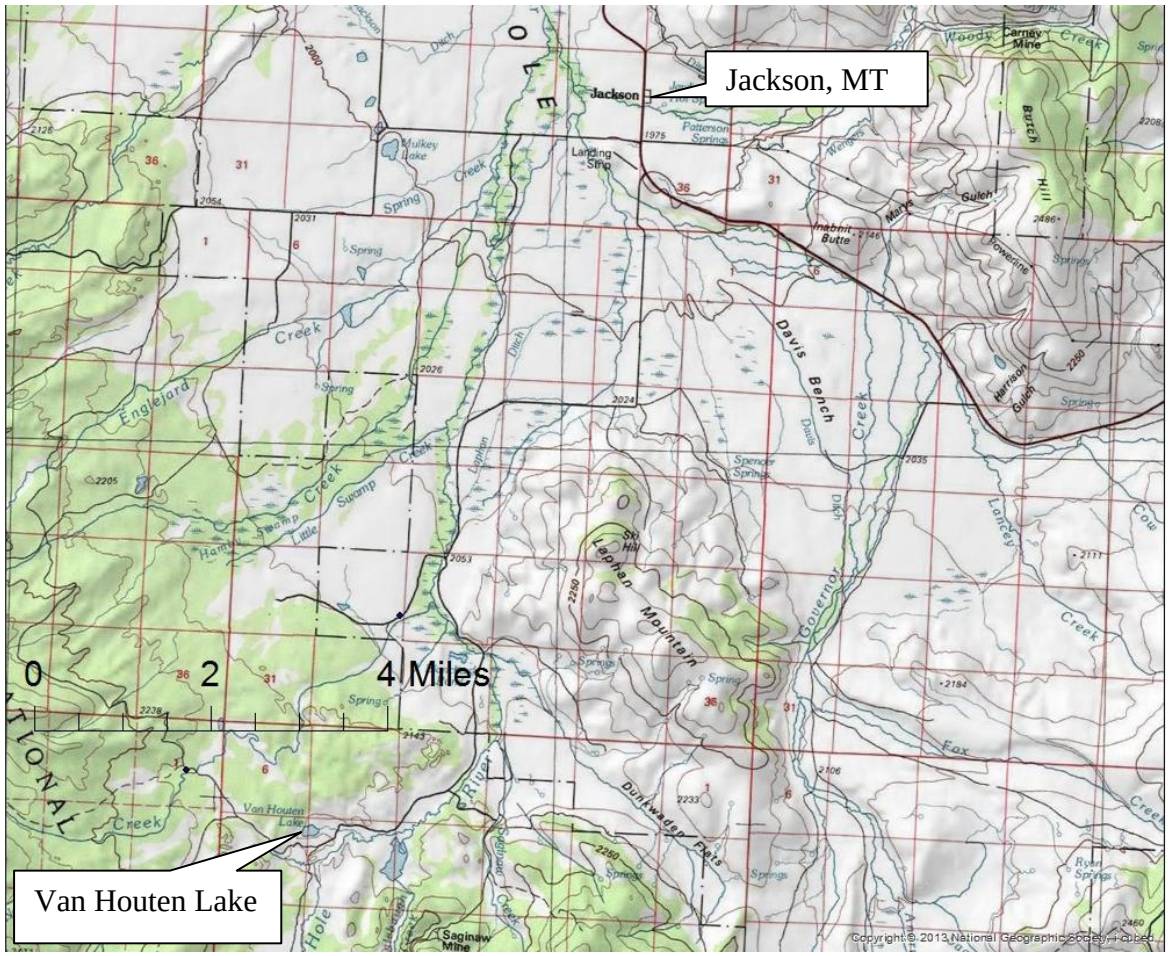
Van Houten Lake is located on the Beaverhead Deerlodge National Forest near the town of Jackson MT in the Big Hole valley (Map 1). The lake is 12.1 acres and has a maximum depth of 9 ft and has 2 spring fed inlet streams on the west and north sides. The outlet flows to the east and enters the Big Hole River approximately 0.5 miles downstream from the lake. The lake outlet consists of a gravel/cobble berm that appears to have been manipulated through time. There are Forest Service Campgrounds on the south and north shores of the lake. Van Houten Lake is shallow and productive and currently harbors a brook trout fishery. Also present in the lake is an over abundant white and longnose sucker population. The high abundance of suckers has caused slowed growth of all fish in the lake including trout and a poor quality fishery. FWP has recently introduced burbot into Van Houten Lake in an attempt to use a natural predator to reduce the sucker population and improve the trout fishery but the survival of introduced burbot has been limited and there has been no change in the sucker population. The goal of this project is to expand the range of Arctic grayling in the Big Hole drainage into Van Houten Lake and also to establish a brood source for westslope cutthroat trout in Big Hole in the lake. One of the other goals of this project is to improve the fishery in the lake to improve the recreational experience for anglers who visit or camp at the campgrounds surrounding the lake.

To restore native species to the lake and to improve the fishery, a fish barrier is being proposed on the outlet stream of the lake to preclude upstream fish passage (Figure 1). The purpose of this fish barrier is to prevent non-native trout that could potentially compete with or hybridize with westslope cutthroat trout from recolonizing the lake. The barrier would also prevent suckers from recolonizing the lake and impacting the trout and grayling fishery. To create the fish barrier the existing berm at the outlet of the lake would be extended downstream approximately 100 ft by importing fill material. By extending the berm downstream the necessary elevation will be gained to create drop of adequate size to prevent upstream fish passage. The barrier structure itself would consist of a 5-ft high waterfall constructed of stacked rectangular boulders with a boulder splash pad at the base to preclude pool formation (see Figure 2 and 3). The opening at the crest of the barrier structure would be 4 ft wide. Van Houten Lake has a very small drainage area (0.18 sq miles) and therefore the predicted discharge at the 5, 50 and 100 year intervals are minimal (2.9, 11.6, 14.9 cfs). At the 100 year flood elevation, water surface elevation at the barrier (assuming weir flows and a 4 ft wide opening) would be 1.6 ft. The constructed banks of the outlet stream will be 2 ft above the elevation of the barrier structure so the constructed outlet channel should have adequate freeboard to pass flows exceeding the 100 year event. Further, since there will be no change in the lake elevation or the configuration of the existing berm that forms the outlet of the lake there should be no additional risk of flooding by establishing the fish barrier structure. The fill for extending the berm would be obtained from an area adjacent to the barrier site. The boulders for the barrier would be imported from a pit near Dillon MT.

The creation of an outlet spawning channel is being proposed for the area upstream of the barrier waterfall (Figure 3 and 4). The two inlet streams provide some spawning habitat for salmonids in Van Houten Lake but the habitat in these streams is limited due to their small size. However, at the outlet where the 2 streams are combined there is approximately 1.3 cfs which is adequate to support a spawning channel. Lake outlets are often ideal areas for spawning habitat because

the water exiting the lake is warmer leading to faster egg development and fry emergence. The spawning channel would be constructed within an inset floodplain whose dimensions would be 4 ft wide by 2 ft deep (Figure 4). The channel would be roughly 24-30 inches wide with water depths between 12 and 18 inches deep (bankfull channel width downstream of the barrier structure is 36 inches, but water depths are less than 1 ft deep). There would be approximately 0.8 ft of fall through the 125 ft of spawning channel. The channel banks would be formed by importing sods from borrow areas adjacent to the project site. Spawning gravel would be imported to provide adequate sized material for Arctic grayling and westslope cutthroat trout spawning.

Once a fish barrier is in place the lake would be proposed for treatment with rotenone to remove the over-abundant sucker population and non-native brook trout. This treatment would occur in the fall after irrigation season and once the fish barrier is in place. After removal of the fish from the lake and once the lake is free of ice in the spring eggs and/or fry from wild grayling and westslope cutthroat would be stocked into the lake. The stocking of wild grayling and cutthroat would continue for up to 3 years to ensure that multiple age classes of fish are present in the lake. Fish harvest would be allowed at the lake but special regulation may be put in place to protect the brood stock (proposed regulations may include only 2 trout or grayling only 1 of which over 14 inches and the inlet and outlet streams would likely be closed to angling to protect spawning fish). The removal of the sucker population will likely result in the creation of a much improved fishery. Growth rates of introduced trout and grayling will likely be greater following sucker removal resulting in higher quality fish being available for anglers to catch.



Map1. Location of Van Houten Lake in southwest of Jackson Montana in Beaverhead County.

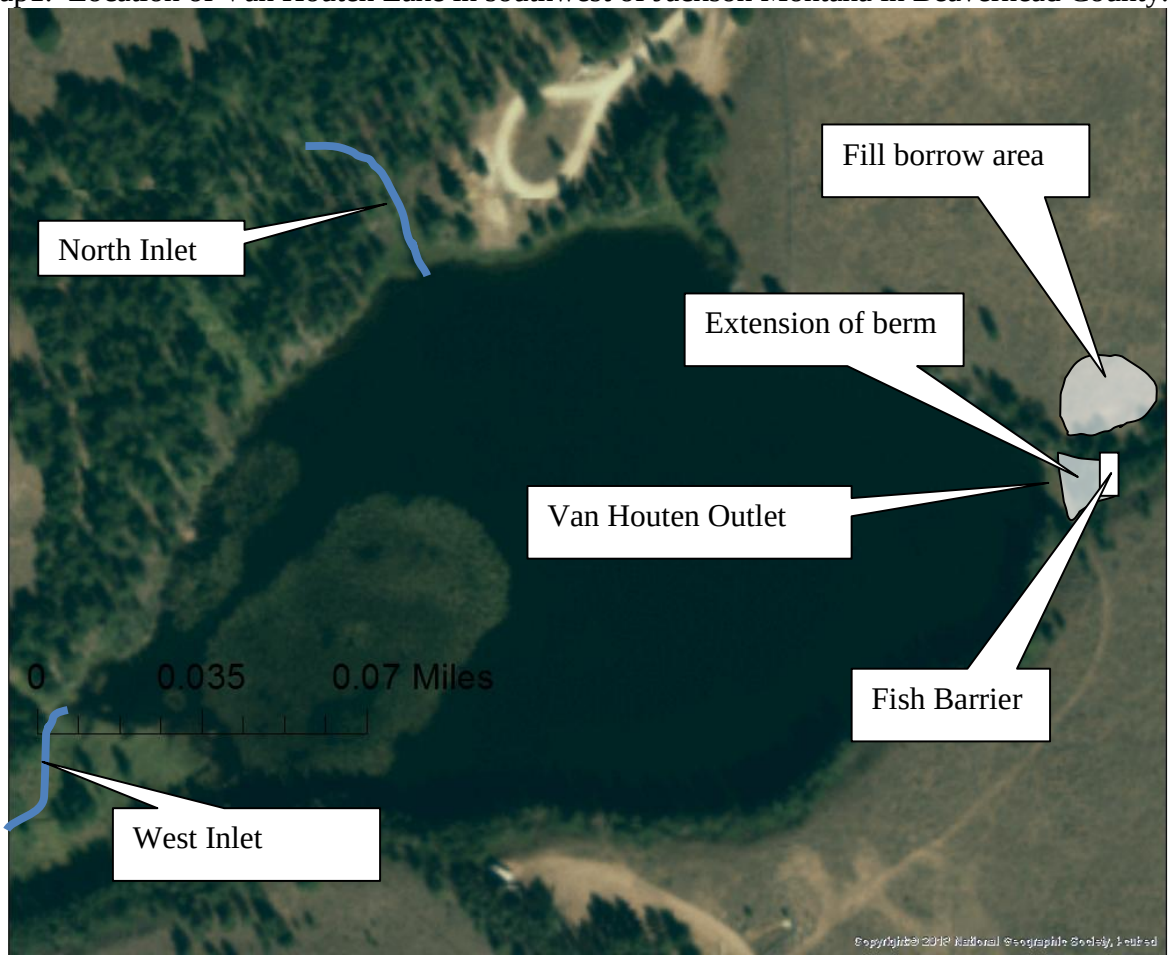


Figure 1. Van Houten Lake showing location of inlets and outlet and proposed barrier structure.

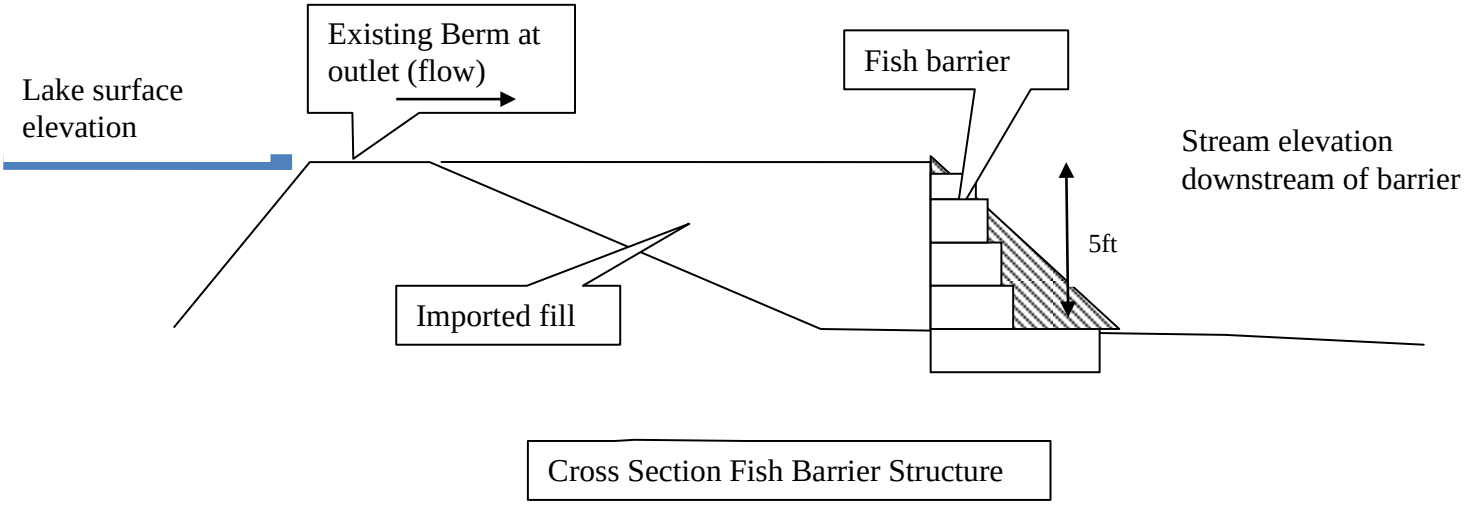


Figure 2. Cross section of the proposed fish barrier at the outlet of Van Houten Lake.

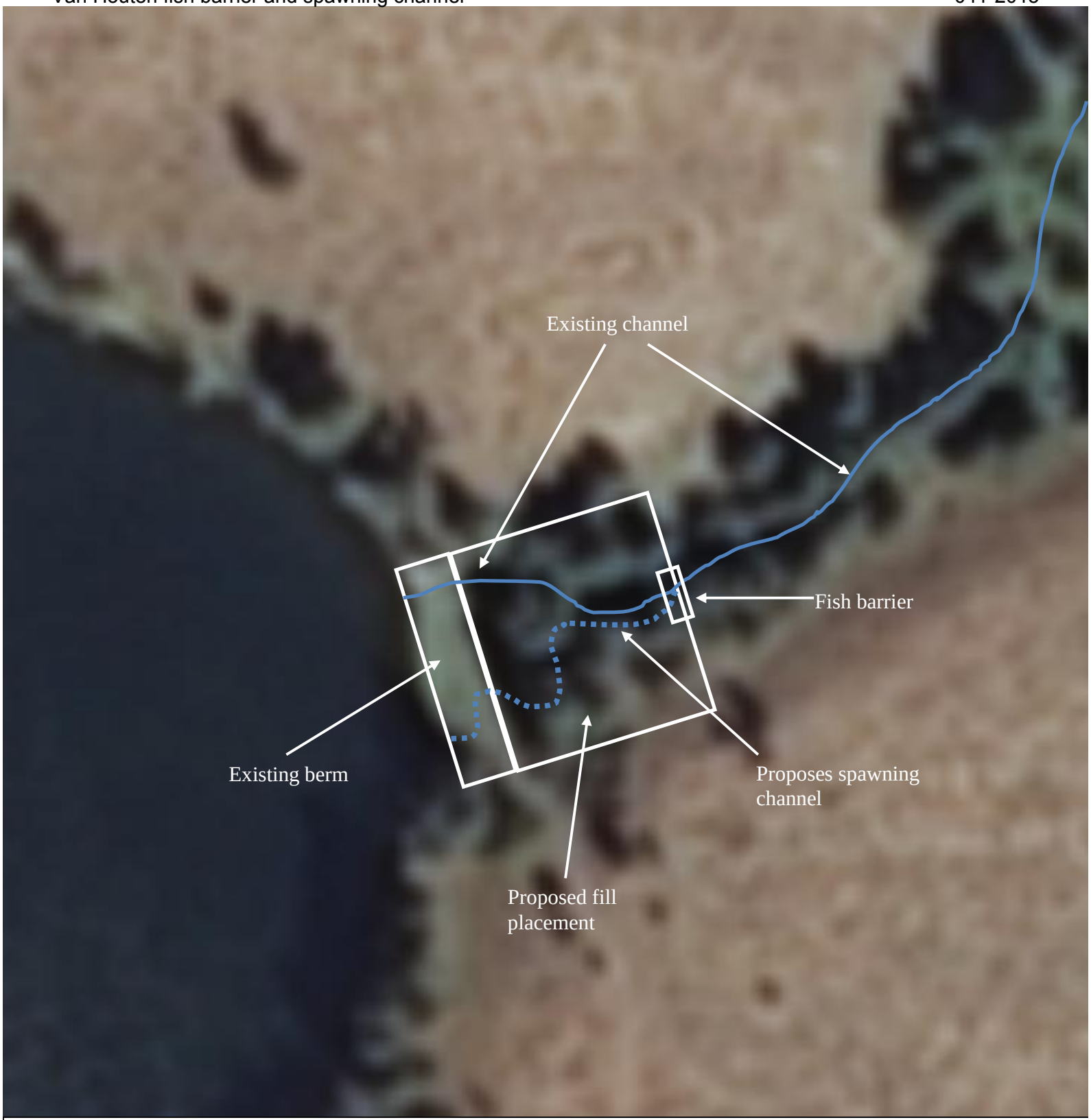


Figure 3. Aerial view of proposed fish barrier and spawning channel the outlet of Van Houten Lake.

Cross section of proposed spawning channel

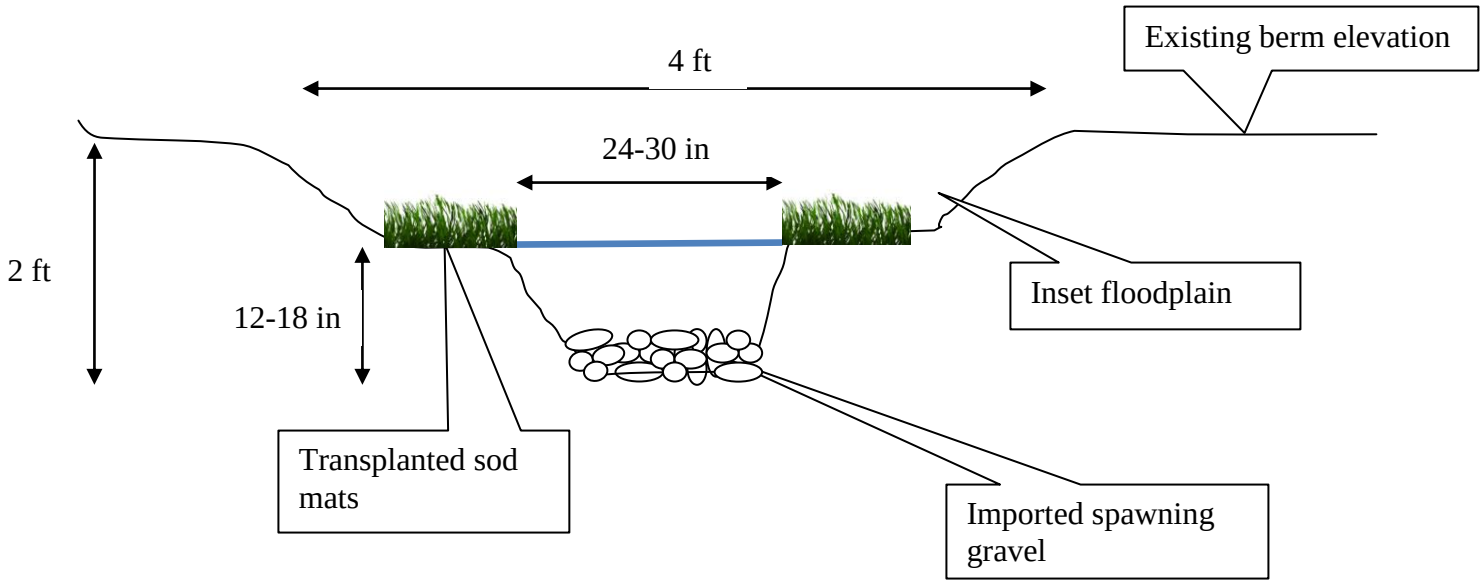


Figure 4. Cross section of the proposed spawning channel in the outlet of Van Houten Lake.

D. Length of stream or size of lake that will be treated: 125 ft of stream and 12.1 acres of lake

E. Project Budget:

Grant Request (Dollars): $ 10,000

Contribution by Applicant (Dollars): $ _____ In-kind $ _____

(salaries of government employees are not considered as matching contributions)

Contribution from other Sources (Dollars): $ 20,000 In-kind $ _____

(attach verification - See page 2 budget template)

Total Project Cost: $ 30,000

F. Attach itemized (line item) budget – see template

G. Attach specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete supplemental questionnaire (fwp.mt.gov/habitat/futurefisheries/supplement2.doc).

H. Attach land management and maintenance plans that will ensure protection of the reclaimed area.

III. PROJECT BENEFITS*

A. What species of fish will benefit from this project?:

Westslope cutthroat trout and Arctic grayling

B. How will the project protect or enhance wild fish habitat?:

This project will isolate habitat for westslope cutthroat trout and Arctic grayling in Van Houten Lake that is currently occupied by non-native brook trout and native white and longnose suckers. The spawning channel creation will ensure that the introduced salmonids have adequate habitat to become self-sustaining.

C. Will the project improve fish populations and/or fishing? To what extent?:

This project will improve the fish population in Van Houten Lake and fishing opportunities. Immediately following the implementation of the project and removal of fish from the lake there will be a decrease in fishing opportunities. However, in only 1-2 years after fish removal the size of the introduced trout and grayling will likely surpass the size of fish present in the lake today. The poor quality of the brook trout fishery today is due to the over abundance of suckers in the lake. The average size and abundance of salmonids in the lake after the project is complete will likely be greater than what is present today.

D. Will the project increase public fishing opportunity for wild fish and, if so, how?:

Yes. The project is anticipated to result in the creation of a wild trout and grayling fishery in an area that is located on public ground and is open to public access.

E. If the project requires maintenance, what is your time commitment to this project?:

No maintenance other than periodic checking of the barrier and outlet channel for debris obstruction is anticipated.

F. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?:

The limited spawning potential of the inlet streams is due more to their small size than degradation of existing habitat.

G. What public benefits will be realized from this project?:

The public will benefit from this project by having an improved fishery in Van Houten Lake with more abundant and larger fish present in the lake.

H. Will the project interfere with water or property rights of adjacent landowners? (explain):

No. Because the surface elevation of the lake is not being changed, there is no need for a water right.

I. Will the project result in the development of commercial recreational use on the site?: (explain):

No

J. Is this project associated with the reclamation of past mining activity?:

No

Each approved project sponsor must enter into a written agreement with the Department specifying terms and duration of the project.

IV. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature: _____ Date: 5-29-15

Sponsor (if applicable): _____

***Highlighted boxes will automatically expand.**

Mail To: **Montana Fish, Wildlife & Parks**
Habitat Protection Bureau
PO Box 200701
Helena, MT 59620-0701

E-mail To: **Michelle McGree**
mmcgree@mt.gov

Incomplete or late applications will be returned to applicant.
Applications may be rejected if this form is modified.

*****Applications may be submitted at anytime, but must be received by the Future Fisheries Program office in Helena before December 1 and June 1 of each year to be considered for the subsequent funding period.*****

Revised August 14, 2014

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

WORK ITEMS (ITEMIZE BY CATEGORY)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	CONTRIBUTIONS			
					FUTURE FISHERIES REQUEST	IN-KIND SERVICES**	IN-KIND CASH	TOTAL
Personnel								
Survey				$ -				$ -
Design				$ -				$ -
Engineering				$ -				$ -
Permitting				$ -				$ -
Oversight				$ -				$ -
Labor				$ -				$ -
			Sub-Total	$ -	$ -	$ -	$ -	$ -
Travel								
Mileage				$ -				$ -
Per diem				$ -				$ -
			Sub-Total	$ -	$ -	$ -	$ -	$ -
Construction Materials								
Rectagular boulders	15	CY, delivered	$110.00	$ 1,650.00	1,000.00		650.00	$ 1,650.00
Riprap rock	25	CY, delivered	$85.00	$ 2,125.00	1,000.00		1,125.00	$ 2,125.00
Spawning gravel	10	CY, delivered	$27.00	$ 270.00	270.00		-	$ 270.00
				$ -				$ -
				$ -				$ -
				$ -				$ -
				$ -				$ -
				$ -				$ -
				$ -				$ -
			Sub-Total	$ 4,045.00	$ 2,270.00	$ -	$ 1,775.00	$ 4,045.00
Equipment								
Excavator	90		$148.00	$ 13,320.00	4,000.00		9,320.00	$ 13,320.00
Dumptruck	80		$120.00	$ 9,600.00	2,500.00		7,100.00	$ 9,600.00
Dozer	20		$105.00	$ 2,100.00	1,000.00		1,100.00	$ 2,100.00
				$ -				$ -
				$ -				$ -
				$ -				$ -
			Sub-Total	$ 25,020.00	$ 7,500.00	$ -	$ 17,520.00	$ 25,020.00
Mobilization								
	1		$1,000.00	$ 1,000.00	230.00		770.00	$ 1,000.00
				$ -				$ -
				$ -				$ -
				$ -				$ -
			Sub-Total	$ 1,000.00	$ 230.00	$ -	$ 770.00	$ 1,000.00

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

TOTALS	$ 30,065.00	$ 10,000.00	$ -	$ 20,065.00	$ 30,065.00

*Units = feet, hours, inches, lump sum, etc.

**Justification for in-kind labor (e.g. hourly rates used for calculations). Describe here or in text.

MATCHING CONTRIBUTIONS

CONTRIBUTOR	IN-KIND SERVICE	IN-KIND CASH	TOTAL	Verified? (Y/N)
FFIP	$ -	$ 10,000.00	$ 10,000.00	N
US Forest Service	$ -	$ 15,000.00	$ 15,000.00	Y
US Forest Service	$ -	$ 5,000.00	$ 5,000.00	N
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	